



A Proposal for a Matrix Backup Scheme

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Your matrix file is a very important file because it contains survey/dredge data that are collected during execution of the Survey program. If the file becomes corrupted, it is very difficult to restore the data even when we have a valid raw data file. For this reason, we provide the Matrix Backup option in the “Navigation Parameters” dialog. The “Matrix Backup Time” (in minutes) directs the Survey program to save the current matrix data at the desired interval rate.

There are several problems related to this approach:

- There is no backup history. We have only one copy of the file.
- If the data is corrupted by an accident, it will be saved in the file that will make it unusable.
- The save operation may take a few minutes due to nature of the output format (ASCII file).

The new backup scheme will follow the following guide.

1. The backup matrix format is binary.
2. The backup matrix name is the original matrix name + “HH_MM”, where “HH_MM” is rounded to the closest time divisible by the backup interval. For example, if we make a backup file at 10:23 and the backup interval is 10 min, the trailing string will be “10_20”. Theoretically, the maximal number of backup files is $24 \cdot 60 / \text{backup_interval}$.
3. The backup matrix extension is mxb.
4. The backup matrix directory is /ProjectName/Archive.
5. Each mtb file can be restored to a mtx file on a right-click in the HYPACK® shell.
6. On exiting, the Survey program will save the matrix in the standard, ASCII format (mtx extension) and, if everything is ok, you do not need to worry about the mtb files.

This scheme will have several advantages over the current backup scheme:

- We have a 24 hours backup history.
- The duration of the backup procedure is a few milliseconds.
- Worst case scenario: $\text{data_loss} = 2 \cdot \text{backup_interval}$ (last backup file is corrupted)
 $\text{data_loss} = \text{backup_interval}$ (last backup file is ok)

There are certain disadvantages:

- Bigger (but not significantly bigger) disk space
- It takes an extra step to restore the data, but the sacrifice is worth the improved security.